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CASE OF HYDROPHOBIA.

THERE are probably some physicians who are still incredulous as to the existence of such a disease as hydrophobia. Many of them believe that the peculiar affection known by that name is merely a form of tetanus; that the symptoms are owing to the nature of the wound, the character of the parts injured and the state of the patient's system, and not to the presence of any morbid virus. They know that the bite of an animal often produces a punctured or lacerated wound; and as the hand is the part that is frequently bitten, a tendon, a fascia or a nervous filament may be the seat of the injury. There would seem, therefore, to be no good reason why tetanus might not arise in this way, as well as from the puncture of a tendon by a nail, or of a fascia or nerve by a bone, as sometimes occurs in compound fractures.

Besides, there is occasionally a close resemblance in the symptoms of the two diseases. In some cases of tetanus there is a great difficulty of swallowing, and in hydrophobia there is frequently a convulsive and spasmodic action of the muscles not wholly unlike what occurs in tetanus. It is true, however, that the convulsive action of the muscles in these two forms of disease is not of precisely the same character, but yet there is often a sufficient resemblance to lead to the belief, that it arises in both cases from the same cause.

It is not strange, therefore, that the opinion as to the identity of the two diseases should have prevailed to some extent, especially as the opportunity of seeing cases of hydrophobia is so rare. I must confess that till within a few years, I did not believe in the production of any specific disease by the bite of a rabid animal. I thought that some of the cases reported might be those of tetanus; others of delirium tremens, and not a few, perhaps, the result of a high degree of nervous excitement, consequent upon the dread, which an individual who had been bitten might very naturally feel as to the consequence. I did not place entire confidence in many of the accounts that were from time to time published of fatal cases arising from the bite of a rabid animal. With-

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out imputing to those who reported these cases the slightest intention to exaggerate or misrepresent, I did not confide entirely in the statements, because they were often made by unprofessional men, who would not be likely to make a very accurate diagnosis. They would, perhaps, overlook symptoms of great importance, and attach an undue value to some of little or no consequence.

And even when the reporters were medical men, the cases were not always given with that accuracy of discrimination, which is so desirable, but which it must be admitted, is often so difficult ; or the symptoms may have been so equivocal, as to render it almost impossible to decide as to the exact type of the disease. A case of this kind is reported in the 1st volume of the *Medico-Chirurgical Transactions*, by the late distinguished Dr. Marcet, of Guy's Hospital. It occurred in London, in the year 1807. After a careful perusal of this paper, it seemed to me that there was nearly as much evidence that the patient died of delirium tremens as of hydrophobia. At any rate, one could hardly decide as to the cause of death from the published account alone, but must rely in some measure in forming his opinion upon that of the medical attendant.

In this case it was not certain that the animal was rabid ; the injury was a very slight one, in the forefinger of the left hand ; the illness did not occur till more than two months after, and no connection between it and the bite was at first suspected. There was no pain or soreness in the part that had been injured, though there was some lameness in the back of the hand, which extended up the arm to the shoulder.

The patient, on the second day of his illness, went out, drank freely, and became intoxicated ; he was irritable, easily agitated, wakeful, and laboring under a partial delirium. He lived in this state six days, having been taken on Monday, the 27th of April, and dying on Sunday, the 3d of May, which is longer than patients usually live who die from hydrophobia.

He swallowed with difficulty, yet he did swallow, and drank fluids of various kinds, to some extent, till within a few hours of his death. In fact it is stated that he drank a pint in the night but two before he died ; and on the very last night of his life, Dr. Marcet says that " he had drank a good deal during the night, but in the morning refused all kinds of liquids, thinking we had put poison in them." He also says that " he had no sleep at all during the night, and had been at times delirious." Now I think that any one who was inclined to doubt the existence of hydrophobia, might argue, with some show of reason, that this was a case of delirium tremens, though I am satisfied that the disease was the result of the bite of a rabid animal. It was not a strongly-marked case, and it is not im-

probable that the scepticism on this subject may have arisen from the fact that the reports of similar cases have been the only ones which have come to the notice of those who have had doubts as to the reality of such a disease.

My doubts on this point, however, were removed a few years since by a case which occurred in a neighboring city. I had not an opportunity of seeing it, but the account given by a medical friend, who was an eye witness, entirely convinced me. Within a few months another case of the kind, of the most painful character, has appeared in our immediate vicinity. This came under my own notice, and would, I am sure, have removed the scepticism of any one, who had seen the little patient. I do not, therefore, deem it necessary to make any apology for giving the details of the same at some length.

CASE.—An interesting, healthy boy, of 7 years of age, was bitten in two places by a dog on Saturday, the 13th of August, 1853, at Longwood, near Boston. One of the wounds was at the outer angle of the eye, involving a part of the upper eyelid, and the other was near the corner of the mouth on the opposite side; one of them having been made by the teeth of the upper jaw, and the other by those of the lower. Neither of them was severe, and the one in the neighborhood of the mouth was quite superficial. It was not known whether the animal was rabid. The dog was a stranger, and no trace of him was ever obtained. Inquiries were at once set on foot, and all that was learned was, that another dog in the neighborhood, who was bitten about this time by an unknown dog, showed such unequivocal signs of madness soon after, that his owner shot him.

The family, however, sent for a physician as soon after the accident as possible, and Dr. Edward A. Wild, of Brookline, saw the child in about an hour from the time of the injury. He adopted the most prompt and judicious means to prevent the absorption of the virus, if any had been deposited in the wounds. From the situation of the injured parts, it would have been impossible to have removed them entirely by the knife, or at least it could not have been done without cutting off a large part of the upper eyelid. He therefore resorted to suction; and entirely regardless of the danger to which he might be exposed in doing so, he applied his lips to the wounds, and continued to suck them for nearly or quite two hours. He then cauterized them thoroughly for a length of time with the nitrate of silver, which is esteemed by Mr. Youatt and some other writers on the subject as the best caustic in cases of this kind.

On the following day the child was brought to my house. He seem-

ed to be perfectly well, and suffered only from soreness arising from the application that had been made to the wounds. He continued in apparently good health for a month. The only thing observable during this period was that he was more sensitive to cold than formerly ; but this was regarded as accidental, and not thought of in connection with his injury.

On the night of Monday, Sept. 12th, he was restless and slept but little. He complained of some uneasiness in his stomach, and the family attributed the trouble to a slight derangement of the bowels. In the morning of Tuesday, the 13th, he had no appetite, and declined taking breakfast. Shortly after, he said he was thirsty and wanted water. As soon as it was brought towards him, he became agitated ; when it was carried nearer, he was slightly convulsed ; and as it approached his lips, he cried out in great apparent terror.

He also complained at that time, and he had done so during the night, of pain in the eye near which he was bitten ; but there was neither redness, swelling nor tenderness about the cicatrix.

These symptoms led his friends to suspect for the first time the nature of the disease, and Dr. Wild, Sen., the father of the gentleman who saw the child directly after the injury, visited him on Tuesday evening. He administered a powder, probably the extract of belladonna, but it is very doubtful whether he was able to swallow any of it. At any rate, his attendants are confident that he never swallowed afterwards.

During that day he was restless, uneasy, moving about the room with his head inclined to one side ; very sensitive to currents of cold air ; quite irritable, disturbed if several persons were in the room, even if they did not speak to him, and complaining of great thirst, at the same time conscious of his inability to swallow. His skin was hot and dry ; his pulse rapid ; his respiration hurried, and his mouth filled with frothy saliva.

He continued very much in this condition through the night, during which he slept but little, and in the morning all his symptoms had assumed a still graver form.

I was requested to visit him in the course of the day, in company with Dr. J. Mason Warren, and I did so at 6 o'clock in the afternoon. Dr. Wild had an engagement that prevented him from meeting us. Dr. Francis, who had seen him with Dr. Wild, was there, but declined going into the chamber with us, as he thought the presence of a number of persons would produce a very painful degree of excitement in the little patient.

When we entered the room we found him dressed, walking about in a

rapid, impatient manner, with a wild expression of countenance, and an inclination of his head to one side. He seemed to be somewhat disturbed by our visit. When spoken to, however, he answered with perfect readiness, and rationally. He evidently preferred being in motion, and it was some time before he could be induced to sit down. When asked what was his trouble, he put his hand to his throat and said that he could not swallow. His utterance was very rapid, and yet his sentences were broken, apparently from his hurried respiration. There seemed to be almost a pause between every two words, giving such a peculiarity to his speaking that I could readily understand the origin of the popular notion, that patients with hydrophobia sometimes bark like a dog. This peculiar mode of utterance is no doubt owing to the extreme rapidity with which the patients breathe. They are very careful to avoid taking a full inspiration, as it is almost uniformly followed by a violent, convulsive action of the most painful character.

As he said he was thirsty, I asked for a tumbler of water. An attendant poured some from a pitcher into a glass. While this was doing, the little patient seemed slightly agitated. I took the vessel in my hand and offered it to him. He evidently wished to take it; but when I carried it towards him, he trembled and drew back; and when it was brought near his lips, he was strongly convulsed, and cried out in a very distressing manner.

I then, unobserved by him, put some water in a cup and offered it to him. He took the cup in his hand and seemed determined to drink. But as it approached his mouth, the same convulsive action and painful cries ensued, and the attempt was abandoned.

Dr. Warren then gave him a piece of soft bread, which he seized with eagerness and forced into his mouth. In a few seconds, however, he spat it out, and said he could not swallow it.

Another piece having been moistened with water, was then offered to him in a spoon. He took this in his mouth, but it was rejected in the same way precisely as the other, and about as soon. We were now satisfied that he could not swallow; for he made great efforts to do it, and showed a wonderful degree of resolution and firmness for a child of his age. We therefore did not trouble him any more in this way.

It was raining violently at the time of our visit. I led him to the window; but the sound of the rain did not disturb him, though there was no doubt that he heard it. The same thing, however, has been noticed in other cases, even when the window has been open.

We examined his throat as well as we could with the imperfect light

we had. There seemed to be a slight degree of redness about the fauces, and the mouth was filled with frothy saliva.

The pulse was 120, and rather small and feeble; and as nearly as could be ascertained, there were more than 40 inspirations in a minute. The skin was dry, and of a temperature somewhat above the natural standard.

We directed two leeches to be applied to the base of the skull; and an enema of a gill of starch with a scruple of assafoetida to be thrown into the bowels every two hours, till all their fecal contents were discharged. After this had taken place, nutritive enemata of milk and arrow root were to be given for nourishment.

I did not see him again; but was told by those who were with him, that there was no improvement of any kind after our visit; on the contrary, his symptoms grew gradually worse, and he passed a restless and uneasy night.

On the following day, Thursday, a partial hemiplegia took place; his articulation became more indistinct, and by noon it was impossible to understand him. As long as he could make himself understood, he seemed to be in possession of his reason. His convulsions were not more violent, and his sufferings were apparently not increased. His symptoms indicated an effusion on the brain some hours before death, and he died between 11 and 12 o'clock at night.

That this was a case of hydrophobia I have no doubt, and it is the first that I have ever seen. It differs from tetanus in many respects. I speak with some degree of confidence on this point, as eleven fatal cases of that disease have come under my observation, and in more than one of these I was present when death took place.

The extent of the wounds and the nature of the injured parts were not such as would be likely to produce tetanic symptoms. The time between the injury and the appearance of the disease was much longer than what usually occurs in traumatic tetanus. The earliest period at which hydrophobia has been known to appear after the bite of a rabid animal, is fifteen days, and the average period is from four to seven weeks; while Prof. Romberg says, that "in the majority of cases traumatic tetanus occurs during the first four days after injury; Dr. Friedrichs found this to be the case in 83 out of 128 fatal cases."

The duration of the two diseases, when in an acute form, is about the same, averaging from two to four days.

The essential difference between them, however, seems to be, that the symptoms of one, tetanus, arise principally, if not entirely, from an affec-

tion of the spinal cord, while those of hydrophobia are owing in great measure to a morbid condition of the medulla oblongata, the spinal nerves being at the same time affected to a greater or less extent. This view of the subject accounts satisfactorily for the difference in the symptoms of the two diseases. The one is purely an affection of the spinal system of nerves, while in the other, those of the brain are to a greater or less extent involved. Baron Larrey says that in tetanus "the functions of the brain remain unaffected until the last moment of life; so that the unfortunate patient who is attacked with this disorder is conscious he is dying."

In hydrophobia, on the other hand, "it is undeniable," says Prof. Romberg, "that the mind is excited, and it manifests itself by the loud and violent manner in which the patient speaks." In adults especially, the mental affection is often very severe, and goes on in some instances to complete mania. This is less frequent in cases of females, and still more rare in those of children. But in all, the functions of the mind are disturbed to some extent, varying in degree in different cases.

In tetanus the presence of fluids, their contact or the noise made by them, does not produce any spasmodic action of the muscles, or in any way disturb the patient. In some of the cases which I have seen, there has been no inability of swallowing to the very last moment of life. When it does occur, it is owing, no doubt, to the spasmodic action of the muscles of deglutition, that derive their nerves from the spinal cord.

In hydrophobia, on the other hand, there is extreme thirst and an almost total inability to swallow from the very onset of the disease. The strongest effort of the will frequently cannot accomplish it. The mere sight of fluids in motion, or the sound caused by their agitation, usually excites violent convulsive action in the patient, if they are in the same apartment with him.

Death in tetanus arises in most cases from asphyxia; the muscles of respiration cease to act, and the lungs of course are no longer supplied with air.

In hydrophobia it "ensues from apoplexy or asphyxia, during a violent paroxysm of convulsion, or it may be from extreme exhaustion."

The difference in the mode of death in the two diseases points pretty clearly to the part of the nervous system from which they originate. The affection of the medulla oblongata in hydrophobia satisfactorily explains why life should be terminated by compression of the brain in that disease; and asphyxia would be a natural consequence of a spasmodic action of the respiratory muscles, that derive their nerves from the spi-

nal cord. Effusion on the brain and consequent compression and apoplexy are not seen in tetanus ; and death from asphyxia in hydrophobia may be regarded almost as accidental, rarely occurring in the more acute form of the disease, but only in those cases in which the symptoms of tetanus are superadded.

Post-mortem examinations of the bodies of those who have died of hydrophobia and tetanus have not, so far as I can ascertain, been very numerous. The most common morbid appearances that have been discovered in the fatal cases from hydrophobia, are congestion, and sometimes inflammation in the brain and spinal cord, with serous effusion ; while in those from tetanus, no anatomical change has been detected in the brain, but there has usually been congestion and sometimes softening of the spinal cord with an increased quantity of serum.

Since writing the foregoing, I have seen another fatal case of tetanus. A gentleman, 58 years of age, fell on Monday evening, Dec. 5th, 1853, while walking in the street. His principal injury from the fall was a severe compound dislocation of one of his thumbs. Amputation was advised, but he was unwilling to submit to the operation.

In thirty-six hours after the accident, signs of mortification appeared.

On the morning of Sunday, the 11th, while at breakfast, "he spoke of a slight sensation of stiffness about the neck," and Dr. Gordon, who visited him at half past 4, P.M., found that "the rigidity of the muscles of the lower jaw was considerable at that time."

I saw him on the following day, Monday, the 12th, in consultation with Dr. G., at 11 o'clock, A.M. We found him in bed ; without pain ; pulse and respiration as in health ; the skin of the ordinary temperature, and his mind rational and calm. In fact, on a superficial examination he appeared to be well.

He said, however, that the muscles of the lower jaw were very stiff, so that he could with difficulty open his mouth ; that any attempt to swallow was followed by a violent spasm, that rendered the jaw almost immovable ; that when his head was not supported and rather inclined forward, there was a strong tendency to draw it back, which was very distressing, and which he had not the power to resist.

He proposed getting out of bed, as he thought we could examine him better. He did so ; and when he attempted to sit down, his head was drawn forcibly backwards. A pillow was placed behind it, but a second violent contraction of the muscles took place. He then asked for another pillow.

He could swallow at this time, and did so at my request, but the effort to accomplish it brought on powerful spasms. He died that evening, at 10 o'clock, evidently from asphyxia.

In a note which I received a few days after, from Dr. G., and from which I have extracted above one or two sentences, it is stated, that he retained "his senses perfectly to the last, and that he had from 2 o'clock, P. M., repeated, very violent spasms of the whole body."

This case, and that of hydrophobia given above, seem to me to derive additional interest when viewed in connection with each other. They exhibit most strikingly the peculiar symptoms of these formidable and distressing maladies, tetanus and hydrophobia, over which, unfortunately, human skill has but little control.

Boston, January 12th, 1854.

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